

## **ABSTRACT**

[0035] A method and resultant device, in which metal nanoparticles are self-assembled into two-dimensional lattices. A periodic hole pattern (wells) is fabricated on a photoresist substrate, the wells having an aspect ratio of less than 0.37. The nanoparticles are synthesized within inverse micelles of a polymer, preferably a block copolymer, and are self-assembled onto the photoresist nanopatterns. The nanoparticles are selectively positioned in the holes due to the capillary forces related to the pattern geometry, with a controllable number of particles per lattice point.